

Appln. No. 10/648,887

Amendment dated: January 22, 2006

Response to Office Action dated: January 27, 2006

### **Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of Claims:**

1. -9. (Cancelled)

10. (Original) An aperture coupled antenna, comprising:  
an RF transmission line defining an antenna input;  
an antenna radiating element;  
an aperture defined in a ground plane through which RF energy from said RF transmission line is coupled to said antenna radiating element;  
a conductive fluid; and  
a fluid control system for selectively varying at least one of a volume and a position of said conductive fluid, whereby by said conductive fluid can be used to modify at least one dimension of said aperture.

11. (Original) The aperture coupled antenna according to claim 10 wherein said fluid control system controls an input impedance of said antenna.

12. (Original) The aperture coupled antenna according to claim 10 wherein said fluid control system further comprises a controller for automatically varying at least one of said volume and said position in response to a control signal.

13. (Original) The aperture coupled antenna according to claim 10 wherein said fluid control system is comprised of a controller and at least one of a valve, a pump, and a fluid reservoir.

14. (Original) The aperture coupled antenna according to claim 11 wherein said controller varies at least one of said volume and said position to maintain said input impedance in a pre-defined range over a selected range of frequencies.

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15. (Original) The aperture coupled antenna according to claim 10 wherein said conductive fluid is comprised of gallium and indium alloyed with a material selected from the group consisting of tin, copper, zinc and bismuth..

16. (Original) The aperture coupled antenna according to claim 10 wherein said control system is comprised of a controller and at least one sensor, and said controller varies at least one of said position and said volume in response to at least one feedback signal provided by said sensor.

17. (Original) The aperture coupled antenna according to claim 10 wherein said aperture is a slot.

18. (Original) (Original) The aperture coupled antenna according to claim 10 wherein said radiating element is a conductive metal patch.

19. (Original) The aperture coupled antenna according to claim 10 wherein said conductive fluid is constrained in a dielectric cavity structure.

20. (Original) The aperture coupled antenna according to claim 18 wherein said dielectric cavity structure is comprised of a low temperature cofired ceramic substrate.

21. (Original) The aperture coupled antenna according to claim 10 wherein said conductive fluid is electrically coupled to said ground plane.

22. (Cancelled).

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